RESPONSE TO SUMMARY COMMENTS

Reviewer Statement			Response
Overall rating:	Moderate (2-3)	Missing the following standards: A-APR.1, A-APR.7, N-CN.9 (only indirectly). Some of the standards are alluded to and not well developed.	Overall, the content in *Discovering Advanced Algebra* correlates strongly to the Standards for Mathematical Content. However, some of the STEM (+) standards, such as A-APR.7 and N-CN.9, are more directly and deeply addressed in *Precalculus with Trigonometry: Concepts and Applications, by Paul A. Foerster*.
Important Mathematical Ideas:	Strong (3-4)	A wide range of how well the important mathematical ideas were developed. Some were extremely well developed with the investigations, but some were only briefly mentioned.	From Dana Center Review: Overall there are frequent open-ended problem-solving opportunities for students as they discover the concepts for themselves. There is frequent opportunity for students to create a problem-solving plan and to carry it out, checking their results for accuracy. From Key Curriculum Press For example, in Lesson 5.3 on page 266 the Investigation Getting to the Root explores the relationship between x and $x^{1/2}$. The exploration of the concept is then continued in the Exercises with two Mini-Investigations, problems 6 and 7, on pp. 270-271 and compared and contrasted in problem 8.
Skills and Procedures:	Moderate (2-3)	Many instances of just “show me the skill” type problems and not well integrated problems.	From Dana Center Review: Overall, there are frequent opportunities for students to create and work with models while grappling with the concepts they are asked to discover on their own. Students move from the models to the symbolic representations or formulas they have conjectured and tested on their own. Students frequently discover the mathematical rule for themselves through the investigations. The rule or formula is then completed by the students. Most activities have students explore patterns to create generalizations. From Key Curriculum Press For example, see Lesson 4.8 on page 238. In the Investigation Looking Up students model composition of functions with mirrors and use the data to write the functions and their composition. In Chapter 5 students investigate exponential and

			logarithmic functions. In Lesson 5.1, p. 252, they develop the formula for radioactive decay and in Lesson 5.7, p. 294, they "discover" the properties of logarithms.
Mathematical Relationships:	Moderate (2-3)	Several were not developed well or only mentioned with little or no discussion.	From Dana Center Review: Students are continually asked to activate their prior knowledge to tackle new problems or conjectures, and there are numerous opportunities for students to generalize their findings. As students progress in their understanding of the concept covered in the lesson, they continue to build the connection among tables, equations, and situations. Overall, there are frequent opportunities for students to create and work with models while grappling with the concepts they are asked to discover on their own. Students move from the models to the symbolic representations or formulas they have conjectured and tested on their own. From Key Curriculum Press As students work through the Investigations and examples, teachers take an active role, with a **Discussing the Investigation** and/or **Discussing the Lesson** section in the *Teacher's Edition* to help guide discussions and develop mathematical ideas. For one example, see p. 231. An example of activating prior knowledge is the Lesson 4.4 Investigation Make My Graph on p. 207.

Standards for Mathematical Practice: (From committee) Standards 1, 2, 3, 6, 7, 8 3 Standards 4, 5 4

RESPONSE TO SPECIFIC CONCERNS

Reviewer Statement	Response
The Dana Center Review mentions that teacher facilitation of the investigations is needed to support students in constructing of viable arguments, attending to precision and generalizing from patterns to rules.	The *Discovering Advanced Algebra Teacher's Edition* provides extensive support for teachers, including mathematical overviews, discussion questions, critical questions, a summary of big ideas, and ways to modify and differentiate instruction. For example, see Lesson 5.5, pages 280–282 of the *Teacher's Edition*. The Modifying the Investigation section offers Whole Class, Shortened, and One Step versions of the Investigation. The Differentiating Instruction box gives the teacher specific suggestions for meeting the needs of ELL students, struggling students, and advanced students. The Discussing the Investigation section supports students in leading a deep mathematical

	discussion of the lesson, encouraging student presentations of their findings. It also stresses the development of careful use of mathematical language and notation, as shown in the Ask questions on page 282.
I think the method and quality of writing is great! However, the text assumes too much about students' prior knowledge to be an effective book by itself w/ no supplemental materials. This would be a great text for a high ability class.	There are several ways in which *Discovering Advanced Algebra* supports all students, not just high achieving students. o Fundamental ideas, such as rate of growth, are developed deliberately and over time. Students begin in Chapter 1 with recursive sequences, developing an understanding of arithmetic and geometric sequences through multiple representations (verbal, graphical, tabular, and symbolic) and through the use of technology. Students build on this understanding in Lesson 3.1, moving from arithmetic sequences to linear equations, and in Lesson 5.1, moving from geometric sequences to exponential functions. In the meantime, they have continued to develop their facility with graphing, solving equations, and modeling with mathematics. o Each chapter begins with a two- to four-page Refreshing Your Skills lesson that highlights and reviews the prerequisite algebra skills for the lesson. Each Exercise Set provides a balanced group of exercises, with Practice Your Skills exercises, Reason and Apply exercises, and a spiraled Review section. In the *Teacher's Edition*, the Differentiating Instruction box, Support Examples, and Assigning Exercises chart give teachers tools for adjusting lessons and assignments to meet their students' needs. o The variety of investigations engages and reaches more students. In some investigations, students gather data by taking their pulse, doing the "wave", or walking. Kinesthetic learners and non-linear thinkers benefit from this varied approach, and the experiences become touchstones for your class. Key textbooks combine various instructional strategies seamlessly to motivate struggling students, ELLs, and advanced learners alike. For example, on p. 237 suggestions for differentiating instruction on the topic of composition of functions include: **ELL:…**take time to show several graphical examples of how the outputs… **Extra Support:** Introduce the composition of functions by using tables… **Advanced:** To give students an extra challenge have them complete the One Step investigation… The comprehensive Teaching Resources Package that accompanies Key textbooks provides a host of resources to assist teachers in integrating differentiated instruction into their lessons.
Very few practice problems	Exercise sets are developmental and begin with opportunities for students to practice new material in **Practice You Skills**. Additional problems are available in the ancillary ***More Practice Your Skills***. The **Reason and Apply** problems are more challenging, developing reasoning and the transfer of knowledge. These problems often include several steps that build on each other. In addition, ***TestCheck® Test Generator and Worksheet Builder™ CD*** provides a bank of excellent practice and test items enables teachers to choose and customize assessment instruments and to generate unlimited practice problems. For example, specific to Standards N-CN.1 and N-CN.2, the Investigation Complex Arithmetic (p. 411) provides in-class practice with adding, subtracting, multiplying, and dividing complex

	numbers. The teacher may also choose to assign the Support Examples on page 412 of the *Teacher's Edition*. The Practice Your Skills Exercises have parts a–d, so Exercises 1–3 actually provide 12 practice problems. Exercises 4 and 5 cover graphing and categorizing number sets. The Reason and Apply Exercises push students to see structure in expressions (Exercise 6), understand and apply the definition of i (Exercises 7 and 8), and solve equations with complex solutions (Exercise 10 and 13). Asking students to think backwards in Exercises 11 and 12 challenges them to make connections to prior learning and move between quadratic forms.
Not many examples	Support Examples in each section supplement the lesson objectives and give teachers further clarifying examples for discussion.
Lesson 7.5—The example tells students they can solve using QF but it only shows an example by isolating x^2 and taking the sq. root	The quadratic formula is covered extensively in Lesson 7.4. The Example on page 410 demonstrates that the quadratic formula is not always most expedient way to solve a quadratic equation. Support example #3 (p. 412) is provided as a way to discuss solving by QF. Students can solve Exercises 10 and 13 using the method(s) of their choice. The teacher can require them to use the quadratic formula, or solve in more than one way if more practice is needed (see the Lesson Example note on page 410 of the *Teacher's Edition*.)
Students are asked to use the zeros to graph a function. Basically non-existent is the Fundamental Theorem of Algebra. Some conjectures are made.	The corollaries of the Fundamental Theorem of Algebra are covered informally in *Discovering Advanced Algebra*. This (+) standard is covered completely in *Precalculus with Trigonometry: Concepts and Applications*, by Paul A. Foerster.
Everything should have the domain stated.	There are numerous examples of students being asked to relate the domain of a function and its graph. For example, see page 132 Step 3, page 135 Exercise 8d, page 141 Step 2, page 148 Step 5, page 150, Exercise 9, page 176 Exercise 8f, page 188, Exercise 4c, page 194 Exercise 8, page 195 Exercise 9, page 384, Exercise 8d, page 418, Step 7, etcetera.
Log base *e*? *e* is only used in an explanation at the end of Ch 5; in 1 problem w/binomial expansion, and only 1 more w/the normal distribution.	Exploration p. 307 devotes a day to studying *e*.